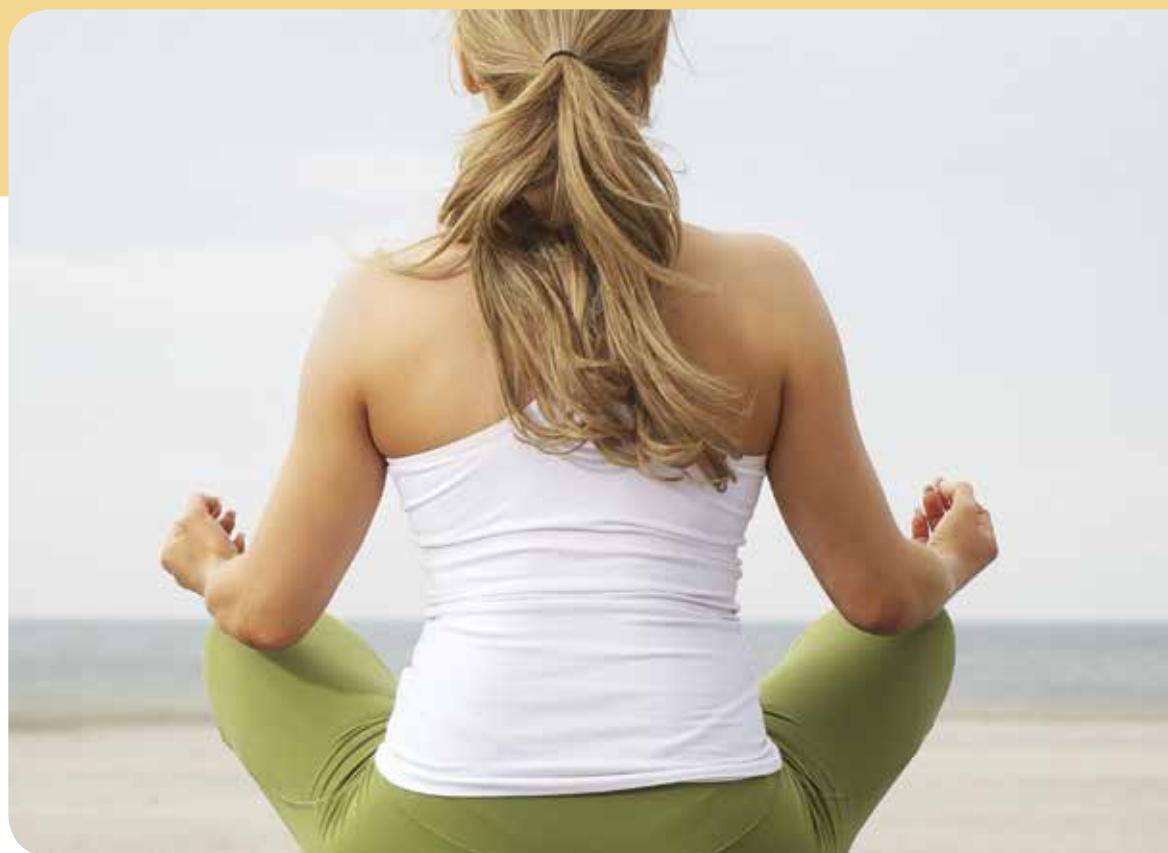


Cervical Spine Surgery

The Baylor Scoliosis Center is dedicated to giving new hope to people dealing with the pain and disfigurement of scoliosis and spinal disorders – even those who previously thought their condition was untreatable.



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Baylor Scoliosis Center

Perhaps you've lived with scoliosis all your life, or maybe you developed the signs and symptoms so gradually, you hardly noticed until the pain was almost debilitating. Whatever your situation may be, the Baylor Scoliosis Center delivers advanced and innovative care you've waited for in a healing environment that nurtures much more than your physical well-being.

At the Baylor Scoliosis Center, we provide quality medical care, along with in-depth information about your condition and your course of treatment. You'll also enjoy the restorative benefits of our home-like surroundings, tastefully decorated in warm tones and designed with your comfort and privacy in mind.

Only a handful of facilities in the nation are equipped to offer spinal reconstructive surgery and revision surgery, and the Baylor Scoliosis Center is proud to be among this elite group. The goal of these delicate operations are to relieve pressure on nerves and maintain a balanced alignment of the spine. These procedures often involve surgically aligning the malformed and painful segments of the spine and fusing them in the correct positions. These surgeries offer a high success rate, and can significantly improve the quality of life for the patient.

In the pages that follow, you'll find important information about the diagnostic and surgical procedures you'll be undergoing. This booklet of information contains information about the upcoming surgery. Please remember this is general information, and all of the information may not apply to each condition. Preparation, education, and continuity of care are essential for a successful surgery. Please take some time before your appointment to fill in all applicable questionnaires, and to read over any special instructions you may need to follow prior to or immediately following your visit. At the Baylor Scoliosis Center, we're committed to delivering quality care to our patients.

Your physician has discussed and recommended cervical spine surgery to help improve your condition. Compression or pinching of nerves as they exit the spine may result in neck pain and numbness, tingling and weakness in the arms or hands. Other symptoms may include headaches or neck, shoulder, upper back, and/or arm pain. More serious symptoms called myelopathy includes a loss of balance, dropping things and difficulty writing.

Many chronic neck pain conditions requiring surgery are due to degeneration of the cervical spine. Changes in the discs can lead to other problems, such as narrowing of the spinal canal, more commonly known as stenosis. Cervical degeneration is most often caused by aging and wear and tear. On the following page you will find more information on some of the common conditions.

Common Conditions of the Spine

Degenerative Disc Disease: Degenerative disc disease is the result of disc aging and/or injury. This degeneration can result in the inability of the disc to work as a cushion. During the aging process, or degeneration, the disc loses its elasticity, which can cause the disc to crack, flatten or eventually turn into bone. As the disc flattens, the bones (vertebrae) rub together which can become painful leading to bone spurs. These bone spurs can cause pressure on the nerves.

Herniated Disc: The disc is the cushion between the vertebrae. The inside of the disc, known as the nucleus, is made up of mostly water. A disc herniation refers to tearing of the outer part of the disc, known as the annulus, allowing the soft watery material on the inside of the disc to come out of its natural location. The disc herniation can then cause pressure on the spinal nerves and/or the spinal cord resulting in arm pain and numbness.

Bulging Disc: A disc bulging refers to the soft inner part of the disc remaining in the annulus, but annulus is no longer in its proper place. The bulging disc can cause pressure on the nerves and/or the spinal cord.

Spinal Stenosis: Bone spurs, disc herniations and other pathology narrow the space through which the nerve roots and spinal cord exist in the spinal canal. This narrowing can cause compression of the nerves resulting in symptoms of pain and numbness.

Spondylosis: Spondylosis is degenerative arthritis of the spine. The arthritis is accompanied by bone spur formation and can cause pressure on the nerve roots.

Radiculopathy: A disease process involving pressure on the nerve root causing you to have pain and numbness going into the arm(s).

Myelopathy: A disease process involving pressure or compression on the spinal cord causing difficulty with walking, balance, and use of your hands.

Pseudoarthrosis: A disease process causing failure of the bone to fuse after a surgical procedure.

Cervical Kyphosis: In patients with cervical kyphosis, a loss of normal curvature causes an imbalance of the neck. The patient's head begins to lean forward, away from the body and they may have trouble standing upright. This could lead to a condition referred to as chin-on-chest deformity. This imbalance can cause muscle fatigue and pain. The correction of kyphotic deformity is challenging and requires complex approaches to the cervical spine.

Cervical Spine Surgery

The surgery scheduled for you may involve the front of the neck (anterior) or the back of the neck (posterior), or a more complex surgery that involves both the front and back (anterior and posterior).

What is Cervical Fusion Surgery?

Anterior cervical discectomy and fusion (ACDF) is a surgical procedure performed to remove a herniated or degenerative disc. The surgeon will access the spine through an incision made in the front of the neck. The surgeon will gently move the esophagus and trachea out of the way to reach the spine. Depending on your particular case, one disc (single-level) or more (multi-level) may be removed. After the disc is removed, the space between the bony vertebrae is empty. To prevent the vertebrae from collapsing and rubbing together, the surgeon fills the open disc space with a bone graft. The graft serves as a bridge between the two vertebrae to create a spinal fusion. The bone graft and vertebrae are often immobilized and held together with metal plates and screws.

Posterior cervical fusion (PCF) surgery is a spinal fusion surgery in the neck, or cervical spine. The surgeon makes an incision in the back of the neck. The neck muscles are retracted, providing access to the spine. Often, cervical fusion surgery is performed in combination with a decompression surgery. A bone graft is placed, and often screws or surgical rods and/or wire are used at the fusion level to provide stability. In general, posterior cervical fusion surgery is performed less frequently than anterior cervical fusion (ACDF).

Bone graft is the process of obtaining bone material to achieve fusion in surgery. An incision will be made on either the front or the back of your hip. Bone will be removed from your hip and placed in your neck. The hip piece will be used to create a bone fusion.

Intra-operative traction uses a device that holds the head still so that there is no motion when you lie flat on your stomach during posterior cervical surgery. You should not wake up in traction, but you will notice small sores on either side of your head where the traction device was placed.

Types of Bone Graft

Autograft is the patient's own bone. Autograft may be bone taken from the patient's neck during laminectomy or in a separate procedure where bone is taken from the patient's hip.

Allograft is donor bone from a bone bank.

Bone graft substitute - there are different types, some of which are synthetic (man-made) and available in different shapes.

Risks and Complications

As with any surgery, there are a number of possible risks and complications of anterior/posterior cervical surgery. The rate of occurrence of potential risks and complications is highly variable. Individual patient risk factors, such as the condition of the disc, the patient's physical condition (bone strength, weight, diabetes, etc.), age, and whether or not the patient smokes, are a few risk factors.

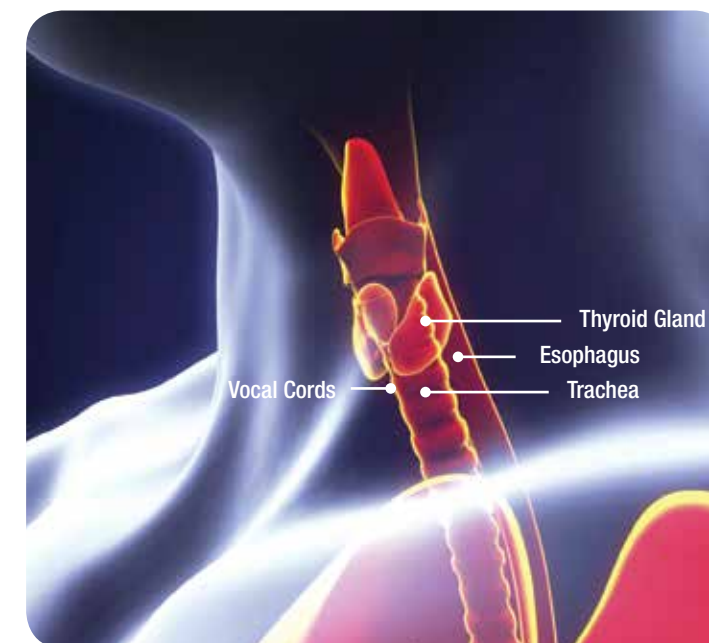
The list below includes some of the common possible side effects of this surgery. Please note that the list below includes some, but not all of the possible risks.

- Side effects from anesthesia
- Infection
- Damage to nearby structures (esophagus, trachea, thyroid gland, vocal cords and arteries)
- Spinal cord or nerve damage resulting in paralysis
- Bleeding or possible need for transfusion
- Persistent hoarseness and/or swallowing problems; even if temporary, these may last for several weeks
- Injury to the vertebral artery resulting in a stroke
- Bone graft shifting or displacement
- Failure of the metal plates and screws, which may necessitate another operation
- The bone graft not healing properly, necessitating another operation
- A blood clot can form in your arms or legs resulting in a pulmonary embolus
- Injury to cervicothoracic nerve causing the eye to droop and eye dryness
- Blindness
- Death

While there are a number of potential risks and complications with ACDF surgery, the main post-operative problem most patients face is difficulty swallowing. During anterior cervical surgery your windpipe (which is known as the trachea) and esophagus (which is the tube that connects the mouth to the stomach) both lie in front of the cervical spine. During the surgery, these structures are gently held to one side so that the vertebrae can be seen. This may be necessary for up to two to three hours. The movement of the trachea and esophagus may cause a great deal of swelling after surgery.

Many patients complain after surgery of throat tenderness and pain, a choking type of sensation, and/or a feeling of fullness in their neck. These symptoms will gradually decrease over the next few weeks or months. If you are having difficulty swallowing in the hospital, a swallowing study will be done to assess your ability to swallow. Remember to use caution when eating dry foods and large portions of meat or when swallowing large pills. Remember to chew carefully and to take small bites of food. Sleeping with the head of the bed up at thirty degrees will help to reduce the swelling.

Also, the small nerve that supplies the vocal cords (recurrent laryngeal nerve) will sometimes not function for several months after neck surgery because of retraction during the procedure. This complication can cause temporary hoarseness which is usually temporary.



Before Your Surgery

Once you have decided to have surgery, there are many things to do to make sure that you're healthy enough for a complex surgery and to evaluate your spine in order to plan your surgery in detail. For medical clearance you will need a chest X-ray, EKG and blood work, and in some cases a cardiac stress test and/or pulmonary function tests. Most surgical patients will have one or more of the pre-operative spine tests listed. These tests are completed pre-operatively (before surgery), and our care coordinators will help make arrangements. When your schedule is finalized a letter with your preoperative testing schedule and appointments will be sent to you.

Some patients who are older or have chronic medical problems require medical clearance before we can give a surgical date. We call this a pre-medical clearance, and it allows time for changes in or new medical treatment if needed. For example, if your diabetes isn't well controlled, you may need to adjust your diet or medications prior to undergoing surgery. This is to ensure that you're medically ready to undergo a major surgery.

A medical examination is required to make sure you're healthy enough for surgery. Medical clearance prior to surgery is completed by our internal medicine physician, along with a cardiologist, hematologist, or pulmonologist if necessary. Some patients will also receive a pain management consult for medication management before and after surgery. Please remember to bring your medication list to all appointments.

Cardiac clearance: You will be required to have cardiac clearance prior to surgery if you are currently under the care of a cardiologist, have a history of cardiac issues, or have risk factors for heart disease. You will be asked to provide the care coordinator with the name and telephone number of your cardiologist. This will allow us to obtain any cardiac studies such as an EKG, stress test or echocardiogram if you have had any of these tests performed in the last year for our surgical chart.

Blood work will be needed two weeks prior to surgery. This may be completed at a lab near your home if timing allows for us to get results back; otherwise they will need to be done near our center. These labs will check the basic blood work and possibly some additional lab work depending on your medical and surgical history. A urine sample will also be taken to rule out urinary tract infection.

If you have had surgery in the past on your cervical spine with a front approach, you may need to meet with an ENT (a doctor who cares for the ear, nose and throat) to evaluate the laryngeal nerves and the vocal cords. This evaluation allows your physician to be informed as to how your vocal cords are functioning, thus allowing them to determine on which side of your neck to place the incision.

Insurance: Our office will obtain surgical pre-authorization from your insurance company. You will usually receive a confirmation letter from them. Please be aware that often the insurance company will authorize one or two days to begin with and if additional time is needed, a case worker with the hospital will update your status and extend the authorization for your hospital stay if necessary. They will also obtain authorization for your transfer to the rehab center if necessary.

Pre-operative Spine Procedures

Standing spine x-rays provide detail of the bone structures in the spine, and are used to rule out instability (such as spondylolisthesis), tumors, and fractures. Images of bones are made by directing an x-ray beam through the body. X-rays should not be performed on women who may be pregnant.

CT Scans (computerized tomography) This specialized x-ray shows the bony vertebrae in detail. The spinal canal can be imaged and assessed for specific conditions. With its excellent bony detail, CT scans are very useful for assessing fractures or non-fused bones (pseudoarthrosis). Through multiple views, CT scans will image specific conditions such as lumbar disc herniation and lumbar spinal stenosis. CT scans should not be performed on pregnant women.

CT Scans with Myelogram provides important information about the spine and nerve roots. A Myelogram requires introduction of radiographic contrast media (dye) into the sac (dura) surrounding the spinal cord and nerves.

MRI (magnetic resonance imaging) This non x-ray study allows an evaluation of the spinal cord and nerve roots. It produces detailed images of discs, the spinal cord, and other soft tissue, and is a great aid in assessing certain conditions. The scan is performed while the patient is lying in a fairly tight tunnel for 30-45 minutes. There is no radiation with the magnet, so the scans may be performed on pregnant women. However, it is not performed on patients with a pacemaker or specific metal in the body because of the magnetic field.

Discography, or discogram, is a diagnostic tool used to determine the structural integrity of a disc (or discs) and to find out if a particular disc is responsible for your back pain. A discogram is used to confirm a diagnosis not to treat back pain. A radiopaque dye is injected through a spinal needle into the center of the disc. The dye is then evaluated for leaks occurring outside the disc walls. At this time, the patient's symptoms (e.g., back pain, tingling sensation) may be experienced due to the pressure created by the dye injection. These symptoms are recorded and used to increase the diagnostic value of the discogram.

Pre-surgical Schedule

Your schedule with dates and times will be sent to you by a care coordinator. The following may be required before surgery.

Two weeks before surgery: Blood work must be completed. You may have it done at a lab near your home. These labs will check basic blood work and possibly some additional labs depending on your medical and surgical history. Fasting is not required for this test. We will confirm the location and date with you.

One week before surgery: (To be done within 1-7 days prior to surgery depending on dates and needs). Pre-testing/pre-registration will be done at the hospital. During this appointment you will be pre-registered for surgery, and have a platelet test (to show how your blood clots), a chest x-ray and an EKG if not done recently.

Five days prior to surgery: As with any surgery, infection is a serious concern. In order to help prevent infection the following are required:

Bathing with Hibiclens®

You will need to begin washing your neck, chest, abdomen, sides, and back with Hibiclens Anti-bacterial Soap. Hibiclens is in a green bottle/box and can be purchased over the counter at most pharmacies or grocery stores. It is stronger than antibacterial soap. You will need to use this daily up to the time of your surgery. You may use a regular soap or body wash after using Hibiclens.

Using nasal swabs with Bactroban®

We will provide you with a prescription for a cream/ointment (Bactroban), and will require you to lightly swab each nostril twice daily, including the morning of surgery, beginning five (5) days prior to surgery. If there is not a pharmacy number on file for you, one will be requested by our care coordinators.

Day prior to surgery: If your hospital pre-operative/pre-registration appointment is not the day prior to surgery, you will need to visit the hospital for one last blood test. This is to determine your blood type and provide additional information for the blood bank. This test must be done by the hospital and must be the day prior to surgery.

Pre-operative Visit: The physicians on our medical staff require all patients to have a pre-op visit prior to surgery. At this visit, we will discuss the details of your surgery and any risks and complications along with post-operative care while in the hospital. The physician will answer any questions you may have regarding your surgery, so write down your questions so they can be addressed at this visit. We want to make every effort to make sure our patients fully understand their surgery and recovery time. You will meet with the care coordinator to discuss final details of arrival time, location and surgery times. At your pre-op visit you will be asked to sign permits for surgery, anesthesia, blood and blood products.

Someone must attend this visit with you. This could be a family member or someone very close to you that will be available during your surgery.

Bone Stimulator: If you are required to have a bone stimulator, this will either be given to you at one of your post-operative visits in our office or mailed to you by a company called DJO. This will not be given to you in the hospital; it is determined by your insurance company. If you have not received a bone stimulator by three weeks after your hospital stay and are having a spinal fusion, please notify our office.



Pre-surgical testing will include lab work, an EKG and chest xray.

Pre-surgical Schedule

Smoking and Nicotine

Studies have demonstrated that the rate of non-fusion in smokers is as much as twice that found in non-smokers. It is thought that this is related to the negative effect nicotine has on bone growth (which is essential for achieving a spinal fusion). One of the most negative effects of nicotine is decreased revascularization of the bone graft. In essence, the bone graft does not get enough nutrients due to a lack of blood supply and, therefore, does not grow and cannot form a fusion. Another recently discovered effect of nicotine is that it may have anti-inflammatory effects, which also interfere with fusion healing.

Because of this, we require that patients undergoing a spinal fusion be nicotine free prior to receiving a surgical date. Once you are 100% nicotine free for two weeks a nicotine test will be given. This test will show the nicotine (current in your system) and cotinine. The cotinine is a biomarker for exposure to nicotine, and it is stored in your fat cells. This will take about six weeks to show negative, but this level is not of concern on the first test. We will do another nicotine test with your pre-operative blood work. Your nicotine should still be negative. If your cotinine is higher than the previous test, that will tell us that you did smoke at some point and this could lead to your surgery being postponed or temporarily cancelled.

Nicotine Products to Stop/Avoid

Cigarettes

Nicotine gum

Nicotine patches

Electronic cigarettes

Cigars

Dip, chew, snuff, etc.



Medications to Stop Prior to Surgery

It is important to avoid certain medications prior to surgery. The medications listed below can have effects on bleeding and swelling, increase the risk of blood clots, and cause other problems if taken. Medications may have been prescribed to you by one or more of your physicians to treat the condition for which you are having surgery, or perhaps they may have been prescribed to treat another condition unrelated to your surgical diagnosis. In either case, if they are listed below **they must be discontinued** at the appropriate time prior to surgery or there is a chance that your surgery will be canceled or rescheduled for your safety.

Please note that there are many over the counter medications, herbals, vitamins and supplements that may negatively affect your surgery and recovery.

It is crucial that you provide us with an accurate list of all medications you currently take when you schedule your surgery. Also, if there are any changes in medications from the time you schedule surgery to your date of surgery please notify us so we can update your medication list.

If you are taking Coumadin (warfarin), aspirin, or anti-platelet medication, for heart or blood clotting conditions, please discuss this with our office prior to discontinuing. We may need to speak with your physician so we can determine how this should be managed before and after surgery.

Remember to check the labels of all your medications, even those you purchase over the counter, to be sure you are not taking aspirin or anti-inflammatory drugs. Tylenol® does not promote bleeding and is generally fine to use in place of aspirin or other anti-inflammatory medications. If you are unsure about any medication, please contact our office. We will review the medication in question and advise you whether or not to discontinue.



Guidelines for Stopping Medications

Medication Type	Discontinue	May Resume
Herbs and Supplements	3 Months Prior	2 Weeks After
Hormones, Birth Control	2 Weeks Prior	3 Months After
NSAIDs / Anti-Inflammatory	6 Weeks Prior	6 Months After
Prescriptions with Blood Thinners	6 Weeks Prior	Up to 1 Month After
OTC with Blood Thinners	6 Weeks Prior	Up to 6 Months After
Bone Density Medications	1 Month Prior	Up to 6 Months After
MAOI	2 Weeks Prior	

Medications to Stop Prior to Surgery

Below is a list of medications in each category to discontinue. Please note that there are many prescribed and over the counter medications and supplements that can be a contraindication to your surgery and recovery. We have compiled a sample list.

You must stop all herbals or dietary supplements for at least three months prior to surgery date. Below are some examples of herbals and supplements, but this is not a complete list. NOTE: Vitamin D, B vitamins, iron and calcium do NOT need to be discontinued. As previously stated, if there is a medication in question, please contact us to review it.

Medications to Stop by Category

Medication Type	
Herbs and Supplements:	Alfalfa, Bilberry, Bromelain, Cayenne, Danshen, Dong Quai, Echinacea, Ephedra, Ephedrine, Feverfew, Fish Oil, Garlic, Ginger, Ginkgo, Ginseng, Goldenseal, Hawthorn, Kava Kava, Krill Oil, Licorice, Ma Huang, Omega-3 Fatty Acids, Red Clover, Saw Palmetto, St. Johns Wort, Vitamin E, Valerian, Yohimbe, Daily Multivitamins
Hormones (HRT)	Activella, Aygestin, Estrogen, Estradiol, Levonorgestrel, Mirena, Micronor, Nor Q, Premphase, Prempro, Prometrium, Provera, Birth Control Pills/Patches/Shots
NSAIDs/ Anti-inflammatory	Celecoxib/Celebrex, Diclofenac/Voltaren, Ibuprofen/Motrin, Etodolac/Lodine, Ketoralac/Toradol, Indomethacin/Indocin, Naproxen/Aleve & Naprosyn, Mobic, Oxaprozin/Daypro, Vicoprofen, Piroxicam/Feldene
Prescribed Medications with Blood Thinning Agent	Stop Any/All Blood Thinning Medications Aggrenox, Aspirin, Carisoprodol w/ ASA, Coumadin, Endodan, Fiorinal, Effient, Prasugrel Magan, Plavix, Pletal, Percodan, Persantine, Soma, Compound, Xarelto, Rivaroxaban, Ticlid
Over the Counter (OTC) with Blood Thinning Agent	Alka Seltzer, Anacin, Ascriptin, BC Powder, Bayer, Doan's, Dristan, Ecotrin, Excedrin, Kaopectate, Midol, Pamprin, Pepto Bismol, Sine-Off, St. Josephs, Vanquish (Check the labels of all your medications, even those you purchase over-the-counter, to be sure you are not taking any aspirin or anti-inflammatory drugs.)
Bone Density Medications	Actonel, Boniva, Fosamax, Evista, Miacalcin
Monoamine Oxidase Inhibitors	Isocarboxazid (Marplan), Phenelzine (Nardil), Pirlindole (Pirazidol), Moclobemide (Aurorix, Manerix), Selegiline [L-Deprenyl] (Eldepryl, Zelapar, Emsam), Tranylcypromine (Parnate)
Misc	Allpurinol (6 weeks)

On the Day of Surgery

On the day of your surgery you will be asked to arrive approximately two hours before it is scheduled. You will check in on the second floor of Baylor Regional Medical Center at Plano and be escorted to a room in day surgery. While in day surgery you will be prepared for your surgery. The nurses will place an IV in your arm for surgery. You will meet the anesthesiologist and your surgeon.

The scheduled time of your surgery is an approximation. We will do our best to keep you informed of any changes.

During your surgery, an operating room nurse will call your family periodically to update them on your surgery. After surgery, the physician will meet with your family in the waiting room on the second floor and let them know how surgery went.



Discharge from the Hospital

Recovery from surgery varies among patients and is dependent on the extent of the surgery as well as the age and health of the individual. Inpatient rehabilitation is not a guarantee, so you need to be prepared for home care arrangements.

If you had an anterior cervical discectomy and fusion (ACDF) and are younger than 60 years old you will probably be discharged to go home from the hospital.

If you are older than 60 and had an anterior/posterior cervical fusion, you may go to inpatient rehab or home. This is dependent on many variables and post-operative progress.

Since it is difficult to predict your post-operative course before surgery has taken place, you should make plans for both going home and going to an inpatient rehab hospital.

Before surgery, we verify if you have benefits for inpatient rehabilitation. It is not until after surgery that your insurance company/Medicare actually evaluates your progress and approves you to go to rehab or deems you able to go home. There are many variables to the rehab approval process.

During your hospital stay, plans for your discharge will be completed with the nurse practitioner, case manager and social worker. They will help with insurance and appropriate referrals to inpatient rehab or help you arrange for home health visits, physical/occupational therapy and any assistive devices you may need.

Discharge to Home

A large percentage of patients go directly home following their hospitalization. The best time to plan for this is before surgery not after. Arrange for help at home by asking dependable family members and/or friends. You will need someone to stay with you for one to three days once you are home. Depending on how you're doing, you may be able to be left at home for short periods if family has to work, but you will need assistance at home for a couple of weeks. You will not be able to drive or do strenuous activity for a few weeks and will need assistance with meals, errands and household chores. You will also need to arrange transportation home from the hospital.

Discharge to Inpatient Rehabilitation

If you have your surgery at Baylor Plano you will be discharged to Baylor Institute for Rehabilitation (BIR) for rehabilitation. They have locations in Dallas and Frisco. We prefer you to go to one of these locations because their team is familiar with patients and their special needs. The following is some general information of what to expect and how to pack for your stay at BIR.

Rehabilitation

Rehabilitation is designed to strengthen a patient physically. It is also provided to educate patients on back safety and precautions until they are ready to come out of their back brace.

- On admission, patients are evaluated by a physician, nurses and therapists that are needed for specific patient care.
- At that point an individualized daily therapy schedule is created.
- Each patient will participate in three hours of therapy a day.
- The medical team and the patient and family will have a conference to determine the estimated length of stay based on clinical assessments. If needed these are done on a weekly basis.
- On discharge, patients will leave the rehab facility and go directly to Baylor Scoliosis Center for a follow-up appointment. Patients will need a family member or friend to pick them up and take them to this appointment. They are given prescriptions for medication for 30 days.
- Any additional therapies at discharge will be determined by your physician at your first or second post-operative office visit. The rehab team will give you a home exercise program to follow.

Personal Item Needs for Rehab Stay

- Sneakers and socks. You will need a pair of shoes that will fit and stay on your feet during walking and therapy.
- T-shirts to wear under your brace (if applicable). This helps to keep the brace clean and reduce rubbing or skin irritation.
- Toothbrush, toothpaste, hair brush, and other personal care items (CPAP machines).
- It is recommended that you bring pants or shorts with loose elastic or drawstring that are easy to get on. Your stomach will be bloated / swollen after surgery and you don't want tight pants to irritate your incision.
- You may also want to bring a zip or button up long-sleeved shirt or jacket in case you get cold.



After Your Surgery

Following surgery you may be monitored in the intensive care unit (ICU) or the progressive care unit (PCU).

A patient controlled analgesia (PCA) machine is used post-operatively for pain control. This device allows a patient to self-dose pain relieving medication at the push of a button.

Pain after surgery is normal and expected. Even simple movements can cause pain at first.

Every movement that you make will be transmitted into the muscles in your neck. Patients have said things like “I feel as though I’ve been beaten up in the back of my neck with a bat.” Fortunately, this pain will eventually subside. The sharp pain typically lasts for two to four weeks. Thereafter, the pain gradually begins to decrease, but will still persist for at least three to six months. How fast the pain stops is dependent upon how long the bone takes to heal. Your hip may feel sore for several weeks following surgery, if you had an autograft. You’ll be given pain medication and possibly ice packs to reduce pain. You may be switched to pain pills the evening of your surgery or the next morning, depending on how well your pain is controlled and your ability to swallow.

You will have a drain coming from the incision in your neck. The drain removes the extra fluid from the layers of tissue under your skin. This helps to reduce the swelling in your neck and allows us to monitor the amount of blood you have lost. The tube will be removed in a couple of days.

You will wear a Miami J collar, which will be placed on your neck during surgery, for about six weeks. Sometimes, with more complex surgery, it can be up to twelve weeks. The brace is used to limit the motion of your neck so that the bone graft can incorporate and fuse. It is important to wear your collar as directed. We’ll teach you techniques on how to turn, get in and out of bed and walk independently in halls. Occupational therapists will help you with activities of daily living (feeding, bathing, and grooming yourself along with functioning independently).

Bed rest is not good for you. The sooner you get up, mobilize, walk and resume normal activities the lower the chance of developing a blood clot in your legs. The symptoms of a blood clot are swelling, redness and pain in your calves. If you develop these symptoms, please let us know right away.

Don’t expect to sleep too much while in the hospital after your operation. The surgery, anesthesia and pain medications allow you to have a several hour nap during the day, which may disturb your wake/sleep cycle. You may only be able to sleep two to three hours the night after your surgery.

You will have an x-ray of your cervical spine before you leave the hospital and you will have x-rays taken in the office at six weeks post-operatively to assess the fusion.

When Can I Leave the Hospital?

Once your drains are out, your medical condition is stable, and your pain is under control with pain medication you will be discharged.

You will go home the day after surgery if you had anterior only cervical surgery (ACDF), and in three to five days if you had both anterior/posterior cervical surgery.

You will be able to ride in a car or plane upon leaving the hospital.

Recovery from cervical fusion surgery varies greatly among patients and is dependent on the extent of the surgery as well as the age and health of the individual. Return to work also varies greatly among patients and is related to overall health and the type of work you do.

If you need more intensive therapies, a short stay at an acute rehabilitation center may be recommended as discussed previously. To qualify for acute rehab, you must be able to tolerate three hours of therapy a day and have a skilled need for two of the following therapies: physical, occupational, or speech. This evaluation will be done during your hospitalization.

Some patients need to approach therapy at a slower pace and will best be served at a skilled nursing facility (SNF). You have the option of choosing an SNF near your home or staying in the Plano area.

Discharge Instructions After Cervical Surgery

Now that your neck surgery is done, you can concentrate on the next phase – recovery. After any surgical procedure, the body needs time to restore damaged tissues. Recovery is a six- to eight-week healing process, sometimes longer, so please be patient, take your medications, and follow recommended activity limits. We will reevaluate you three weeks after surgery to discuss your progress.

Doctor's Visits and Follow-Up

Patients will return for a follow-up visit to see the doctor approximately two to three weeks after discharge. Follow-up visits help make sure your recovery is successful. Your medications will be refilled if necessary. The incision will be inspected and the stitches or staples will be removed. An x-ray will be taken to confirm that the fusion area is stable and healing appropriately. The graft should be almost completely healed in about three months. If you had arm or hand pain, numbness, or weakness prior to surgery, your doctor may also evaluate nerve function and arm strength.

Discharge Medications

Pain medication: You will be prescribed either Norco® or Percocet®. These medications contain a large dose of Tylenol; therefore, do not take more than eight tablets a day or take any additional Tylenol.®

You should gradually reduce the amount of pain medication you take. Begin by increasing the amount of time between pills, and then reduce the number of pills taken each time. A certain amount of discomfort can be expected until the inflammation and swelling goes down and nerve sensitivity decreases. Most patients are off most pain medications by six to eight weeks.

Side effects of narcotics include constipation (see section on constipation), drowsiness, itchiness, nausea and vomiting. The use of narcotics can impair your judgment. While on narcotics, you should not make important decisions, operate heavy machinery or work at heights.

Muscle relaxant: (If you had posterior surgery) Muscle retraction and dissection is a necessary step in your surgery, therefore post-operative muscle spasms can be quite severe and painful. Muscle spasms can be managed by the combination of muscle relaxants, rest and stretching. Muscle relaxers are scheduled to be taken every eight hours. DO NOT stop muscle relaxants unless directed to do so as this will increase your pain. Some examples of muscle relaxants are metaxalone (Skelaxin®), methocarbamol (Robaxin®), carisoprodol (Soma®), cyclobenzaprine (Flexeril®), and tizanidine (Zanaflex®).

Side effects of muscle relaxants include flushing, dizziness, drowsiness, metallic taste, nausea and vomiting.

When you were discharged from the hospital, you may have been given valium for muscle spasms, this is to supplement not replace scheduled muscle relaxants (Robaxin). Valium is to be used sparingly when muscle spasms are not relieved by rest or narcotics. We do not refill valium; it is just for the first month after surgery.

Do not take non-steroidal anti-inflammatory medications, such as ibuprofen, Aleve®, aspirin, Motrin® and Advil®, for six months following surgery as these medications may block proper bone healing.

Contact us only if your pain is more severe than it was before surgery or if you develop fever.

The Bone Graft Donor Site (if applicable) can be a source of pain and discomfort. You may apply a cold pack over the bone graft site intermittently. These symptoms will dissipate over a period of time, but they may even linger more than two to three months after surgery.

Constipation

You may need over the counter stool softeners (Colace) or laxatives (MiraLAX®/Senokot®) after surgery. Anesthesia, pain medications and inactivity can all cause constipation. If you have chronic gastrointestinal conditions, please consult your PCP, internist or gastroenterology physician. Drinking plenty of water (eight 8-ounce glasses daily) will help. Do not go longer than three days without a bowel movement. These over the counter remedies include Metamucil®, Surfak®, Senokot®, and milk of magnesia, and as a last resort, use an enema.

Incision Care

Care of your incision is vital to the success of your surgery. Once you leave the hospital, care of your incision is your responsibility. Please follow these guidelines:

Always wash your hands prior to touching the dressing over your incision. Anyone involved in the care of your incision must wash their hands prior to touching the dressing or incision.

You may shower 24 to 48 hours after surgery. Shower with regular soap and water, and pat the incision area dry. **DO NOT** take a bath or get into a pool for at least three weeks or until the incision is closed and well healed; this increases the chance for infection.

You will not need to come in to have your sutures removed. Your incision will be closed with absorbable sutures and Steri-Strips. Leave the Steri-Strips in place for fourteen days after surgery. They may fall off on their own before that time. If you think you are having an allergic reaction to the Steri-Strips, call the office.

The incision can be left open to air. Keep the incision site clean with regular soap and water, and pat the area completely dry. Do not apply any ointments or alcohol.

Inspect the incision daily. You may need a mirror to see the incision. Incisions may be numb or tender for a few weeks after surgery. Some redness around the incision is common and usually disappears within one to three weeks.

Swallowing

While there are a number of potential risks and complications with ACDF surgery, the main post-operative problem most patients face is difficulty swallowing. During anterior cervical surgery your windpipe (which is known as the trachea) and esophagus (which is the tube that connects the mouth to the stomach) both lie in front of the cervical spine. During the surgery, these structures are gently held to one side so that the vertebrae can be seen. This may be necessary for up to two to three hours. The movement of the trachea and esophagus may cause a great deal of swelling after surgery. Many patients complain after surgery of throat tenderness and pain, a choking type of sensation, and/or a feeling of fullness in their neck.

These symptoms will gradually decrease over the next few weeks or months. If you were having difficulty swallowing in the hospital, a swallowing study will be done to assess your ability to swallow. Remember to use caution when eating dry foods or large portions of meat or when swallowing large pills. Remember to chew carefully and to take small bites of food. Sleeping with the head of the bed up at thirty degrees will help to reduce the swelling.

Also, the small nerve that supplies the vocal cords (recurrent laryngeal nerve) will sometimes not function for several months after neck surgery because of retraction during the procedure. This complication can cause temporary hoarseness.

Contact the office if you have:

- Redness, swelling, or increased pain around the incision edges
- Pus or bad smelling drainage from the wound
- Opening of the incision

Scars: Anterior incisions usually will gradually fade over the next year, so that the incision is hardly noticeable. Posterior incisions do not always heal as well and often leave a noticeable scar.



Neck Brace

Most patients are required to wear a neck brace after surgery. This reduces the stress on the neck area and helps improve bone healing and decrease pain in the post-operative period. You do not need to wear the collar in the shower. The collar will help with pain by supporting your chin and neck allowing your muscles to rest.

If you experience skin irritation from the brace rubbing your skin, DO NOT apply talc powder to open areas of skin. You may use a scarf or handkerchief between the area of skin and the brace to prevent irritation.

Physical Therapy

Physical therapy typically begins four weeks to three months after surgery, and usually lasts six to twelve weeks. Initially, stretching exercises are performed to increase the flexibility and strength of muscles, specifically your neck, shoulder, arms, and surrounding musculature. This is usually followed by aerobic exercises to improve body conditioning. Resistance training with weights improves the strength and stability of the body, and especially the neck. Maintenance programs are key in maximizing your result.

Activities and Limitations

- No driving until first appointment unless cleared by your physician.
- No lifting greater than 10 pounds until first appointment
- No overhead reaching, as this will cause pain/spasms
- No soaking in a pool of water (bath, swimming pool or hot tub)
- No running
- Do plenty of walking and light activity
- Avoid straining

Disability Forms

The office will complete any necessary short term disability forms for patients undergoing surgical procedures. If you are on disability or require completion of disability forms, please complete as much of the disability form as possible prior to your visit, leaving the physician signature area blank.

Bring the form to the office at the time of your visit, or send it by mail. The form will be carefully reviewed and signed. Make a copy so you can fill out the future disability paperwork. If the paperwork needs to be faxed, have the fax number available. This will expedite your disability paperwork.

Due to the complexity and volume of requests, please allow three to five business days for the disability forms to be completed. Should you remain on disability for a time period greater than one year post-operatively, you may be referred back to your primary physician for issues related to disability.



Frequently Asked Questions

How long will the swelling last in my neck?

Every patient is different. The swelling can last for weeks, even a few months. The swelling should only slightly improve each week, but it is important that you call if it is not slowly improving. Sleep with the head of the bed up at thirty degrees by using pillows or by sleeping in a reclining chair, with the head of the chair in the upright position. You may sleep on either side. Sleeping in the elevated position helps to reduce the swelling in your neck in the first seven to ten days after your surgery. After seven to ten days, you may sleep in a flat position if you are comfortable, but it may be best to slowly decrease your pillow height every few days until you adjust to the flat position. Remember if you are having trouble swallowing, use caution when eating dry foods and large portions of meat or when swallowing large pills. Remember to chew carefully and to take small bites of food. If you cannot swallow water without coughing notify the office immediately.

How long should I avoid driving?

You should not drive while taking narcotics. You should avoid driving during the busy traffic times and remember to carefully position your mirrors before starting to drive. Some states do not allow collars when driving. You should wear your collar when driving, so if your state does not allow you to drive with a collar, then do not drive for the first six weeks post-op.

Why do I have pain/muscle spasms between my shoulders?

When the disc degenerates, it collapses. If you had a fusion, when the bone graft is placed during surgery, it stretches the disc height back to its normal place, which is a change that your body senses. Once the bone heals, the pain should dissipate. You may also experience muscle spasms due to having an incision on your skin and some of the muscles may have been stretched or released to expose the spine. Ice and/or heat on the incision and muscles will help ease the spasm. Your doctor may prescribe a muscle relaxer to further help with the spasms. Once the bone heals, the pain should dissipate.

What kind of follow-up is required?

Patients return to our office for routine follow-up appointments at intervals that are determined on a case-by-case basis. We typically see patients back in the office within a few weeks following surgery and then increase this to several months followed by an annual exam. Your individual needs will be determined by your surgeon at each follow-up visit.

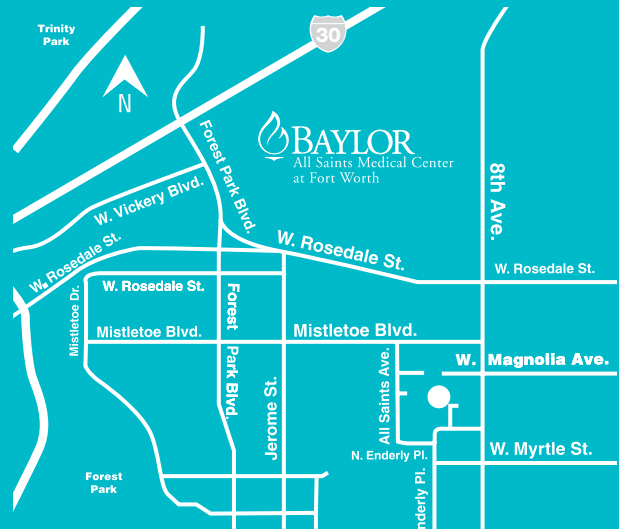
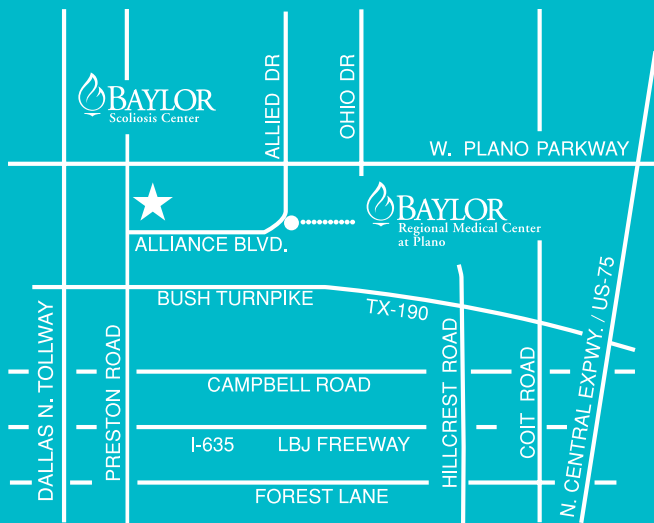
When should I be concerned about my swallowing?

Swallowing problems and increased phlegm production after surgery are not unusual, but if swallowing becomes more and more difficult, then please call the office immediately. You may use Chloraseptic spray to help with the sore throat or Mucinex for increased phlegm production.

I've come down with a fever after surgery, should I be concerned?

Post-op fevers are common and due to many things. You should call the office if you develop any of the following:

- Elevated temperature greater than 101 degrees Fahrenheit
- Drainage from the incision site and/or excessive redness of the incision
- Excessive pain from the incision site or progressive pain from the incision site
- Sudden weakness, excessive numbness/tingling or burning pain in the arms or legs
- Loss of control over your bladder or bowel
- Difficulty swallowing liquid



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